emotion experienced at or near the time of sexual intercourse, which in a number of such cases has appeared to cause the extra-uterine pregnancy.

The adhesion of the walls of the Fallopian tube on each side of the tumour in this case is what is usually found. It must have occurred after the ovum reached its place of development in the tube, because the occlusion was on both sides of the ovum, although, as is usual in such cases, the occlusion was much more extensive between the ovum and the uterus than between the ovum and the fimbriated extremity of the tube.

Probably in all cases of tubal pregnancy there is a decidua formed in the uterus which may be cast off at any time during the pregnancy, but in many cases is not cast off till the end of eight or nine months, when regular labour-pains come on. In our case the decidua was probably cast off at the menstruation or the metrorrhagia, for it can well be doubted whether this was a true menstruation, which ceased four days before death; only a small fragment near the cervix remaining. It seems likely that the increased congestion of the internal genital organs attendant upon this menstruation or metrorrhagia led to a slight hemorrhage between the ovum and the surrounding walls of the tube. The increased pressure in the tumour due to this extravasation of blood finally led to its rupture and the escape of blood into the peritoneal cavity, which caused the pain, the collapse, and the death of the patient. In support of this is the fact that the blood found in the tube was firmer, more organized, and apparently of older date than the blood in the peritoneal cavity. It has been noticed in cases of extra-uterine pregnancy that menstruation or metrorrhagia very often immediately precedes rupture of the cyst. In this case the rupture of the cyst took place a month or two earlier than is usual in cases of tubal pregnancy. In the first six weeks of tubal pregnancy rupture of the cyst is either very rare or else it does not cause the death of the patient.

ARTICLE VII.

TRAUMATIC CEPHALHYDROCELE; WITH A REPORT OF TWO CASES.[1]

By P. S. CONNER, M.D., Professor of Anatomy and Clinical Surgery in the Medical College of Ohio, etc.

COMPOUND fracture of the skull, especially of its base, with resulting escape of the cerebro-spinal fluid, is, as every one knows, a common accident; but the occurrence of subfascial accumulation of this fluid, in connection with and consequent upon simple fracture of the vault, is of such rarity that I trust I may be pardoned for bringing to the notice of the Association two cases that have recently come under my observation.

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[1] Read before the American Surgical Association Washington, April 30, 1884.

Case I.—H. M., æt. 12½, a healthy, well-developed active boy, on the 11th of October, 1883, fell from a wagon-seat on which he was riding, and a wheel passed over his head. He was not rendered unconscious, and quickly getting up walked, unassisted, into a house near by. When seen an hour and a half later by Dr. A. M. Brown,[1] he was found to have received a multiple fracture of the lower jaw (near the symphysis and in front of each angle), a lacerated and contused wound of the left eyebrow, and a simple depressed fracture of nearly the whole of the right half of the occipital bone above the superior curved line and of the parts bordering upon the masto-parietal suture. A marked swelling was present over the fracture area, which was not noticed to pulsate, and was supposed to be due to blood extravasation. At the expiration of a week, no absorption having taken place and a slight serous discharge from the nose having commenced, associated with some puffiness of the right eyebrow, Dr. Brown put a small trocar into the swelling and drew off ℥iv of fluid of pale straw-colour. The sac rapidly refilled, and after four weeks it was tapped again, ℥v being taken away. Subsequently the operation was repeated four times, at intervals of four, three, four, and two weeks, the amounts of fluid removed being ℥v, ℥iij, ʒxj, ʒv, making in all ℥xix. The third tapping I made, using the aspirator. The fluid withdrawn was perfectly clear and colourless, becoming turbid only after standing a day or more; it had a sp. gr. of 1007, contained no albumen, or but a trace, no sugar, and the chloride of sodium was present in proportion of 6.6 parts per thousand.

At no time while under treatment was the boy unconscious or delirious; but his mental condition was always one of marked irritability, and at times there was decided insomnia. Irregular shooting pains in the head were frequently complained of; and at the time I aspirated, the drawing off of the fluid was stopped because of the occurrence of decided pain in the front and right side of the head, which continued with progressively lessening severity during the succeeding forty-eight hours. No muscular twitchings were at any time observed. The temperature never rose above 100° F. The heart's action was irritable, and for weeks the pulse ranged between 100 and 120. Now, six months after the receipt of the injury, the temperature is normal, the pulse-rate 85, and the boy is in excellent general condition; but he is markedly more peevish and fretful than he was before he was hurt. There is a deep depression, 3½ × 1½ inches, in the right occipito-temporal region, and the outer surface of the originally detached large piece of bone is on a level with the inner surface of the skull around. The subaponeurotic sac still exists, and contains a small quantity of fluid, perhaps from ʒj to ʒij. Pulsation synchronous with that of the heart, though not strongly marked, can be distinctly both felt and seen. The point or points of communication with the intracranial space cannot be discovered.

Case II.[2]—J. W., coloured, æt. 27 months, hydrocephalic and rachitic, fell from a height of four or five feet, striking on its head; no scalp wound produced. Was rendered unconscious and remained so for several hours. Very quickly there came on a swelling on the head, which a few days later (Aug. 9, 1883), when the child was admitted into the Cincinnati Hospital, was found to be located over the right parietal bone extending forward a little on to the frontal, to measure 4½ × 3½ inches, and to be fluctuating and pulsating. Neither fontanelle had as yet closed, and there was a membranous interspace about 1½ inch wide between the parietals; and probably one between the parietals and the frontal, though on this point I cannot get definite information. Through the swelling there could be felt a radiating fracture of the parietal, the bone superiorly and posteriorly being somewhat forced upwards and outwards. The child while in hospital has never been unconscious or delirious, or unusually peevish. It was many weeks before it was able to stand alone, and only quite recently has it begun to walk. It has had no operative treatment of any kind at any time. Now, nine months after the accident, the fontanelles are closed; the parietals are ossified up to the sagittal suture; there is apparently no subaponeurotic sac containing fluid, though pulsation can be distinctly felt through a membranous space which, of irregular shape 1 inch in its greatest diameter, lies along the course of the coronal suture from a point 3 inches below the bregma. A broad, much elevated, bony ridge surrounds the original fracture-area, and clearly indicates the position and size of the subaponeurotic tumour. In some respects this case is like the one reported by Mr. Erichsen.

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[1] Under whose care he was, with whom I several times saw the case in consultation and to whom I am indebted for much of the history here given.

[2] It was but a few days ago, since this paper was written, that my attention was called to this case by my colleague Dr. D. S. Young, under whose care the child came when admitted to hospital.

As far as I have been able to ascertain, there have been reported but 19 cases (including my own) of subfascial accumulation of the cerebro-spinal fluid after simple vault fracture, and three others where there had been originally a communicating wound of the scalp which had closed, two of these three being cases of gunshot injury, and in the third the skull had been trephined. That the fluid is the cerebro-spinal cannot, I think, be questioned, since whenever examined there have been found nearly or quite the same specific gravity and the characteristic absence of albumen and abundance of the chloride of sodium. Sugar has not been present, neither has it always been in the analyzed specimens of undoubted cerebro-spinal fluid; indeed, according to Hoppe-Seyler, it "only occurs as a result of irritation or inflammation of the brain or spinal cord." Further it may be noted that in the case that I saw, when the sac was very much distended there came on a serous discharge from the nose, and in Haward's case the conjunctiva burst and a large quantity of fluid escaped, and it is a recognized fact that there is a direct communication between the subarachnoid cavity and the nasal and ocular lymph-spaces.

Mr. Clement Lucas, in reporting his second case (*Guy's Hospital Reports*, 1880–81), expresses his belief that the discharge comes, not from the subarachnoid space, but from the ventricular cavity; and post-mortem examination of his first case, which lived a year and nine months after the receipt of the injury, proved that "the cerebro-spinal tumour had communicated with the lateral ventricle, the descending and posterior cornua of which had become together dilated into a large cavity adherent to the skull." As indicating the correctness of this belief of Mr. Lucas, it may be noticed that communication with the lateral ventricle was upon

No.	Reporter.	Authority.	Sex	Age.	Location of fracture.	Time of appearance of tumour after receipt of injury.	Operative treatment.	Result.	Time of death.	Cause of death.	Remarks.
1	Marjolin,	Vivien, Thèse de Paris, No. 440, 1883.	M.	16 mos.	Upper and posterior left parietal region.	4 months.	2 tappings.	Recovery.	......	......	Pulsation noticed.
2	Haward,	Lond. Lancet, July 17, 1869.	M.	19 mos.	Right frontal region.	At once.	1 tapping.	Death.	12 days after puncture.	Meningo-encephalitis.	Pulsation noticed.
3	Giraldes,	Mal. Chirurg. des Enfants, 1869, p. 730.	M.	14 mos.	Posterior right parietal region.	A number of days.	2 tappings, 1 free incis.	Death.	20 days after first tapping.	Meningo-encephalitis.	
4	Potain,	Vivien, op. cit.	F.	7 mos.	Posterior right parietal region.	Unknown	3 tappings.	Death.	18 days after first puncture	Meningo-encephalitis.	
5	Erichsen,	"Surgery," Am. ed., 1878, vol. i. p. 534.	..	Child	Left side of skull.	Very soon	2 tappings.	Death.	10 days after injury.	Meningo-encephalitis.	Child hydrocephalic.
6	Lucas,	Guy's Hosp. Reports, 1876, p. 363.	F.	2 yrs.	Left temporal region.	About 2 weeks.	1 aspiration.	Death.	21 months after injury.	Meningo-encephalitis.	
7	Emery,	Bul. de la Soc. Anatom., 1876, p. 36.	..	2 yrs.	Frontal region.	Unknown	1 tapping 6 mos. after fall, followed by free incision.	Death.	......	Erysipelas and meningitis.	
8	Schmitz,	Handb.der Chir., Billroth & Lücke, L. 30, S. 152.	..	5 mos.	Lower right parietal region.	10 days.	3 punctures and compression.	Unknown.	......	......	Removed from hospital while under treatment. Mistaken for hæmatoma.
9	Weinlechner,	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	M.	3 yrs.	Left parieto-occipital region.	Soon.	None.	Recovery.	......	......	When first seen by Weinlechner, boy was 15 years old, and an epileptic. Pulsation noticed.
10	Weinlechner,	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	F.	7 mos.	Right parietal region.	Immediately.	None.	Recovery.	......	......	Died some months later of smallpox. Pulsation noticed.
11	Weinlechner,	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	F.	4 mos.	Left parietal region.	Immediately.	None.	Recovery.	......	......	Was living more than five years later. Pulsation noticed.
12	Weinlechner,	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	M.	23 mos.	Posterior right parietal region.	Unknown	2 punctures.	Death.	9 days after 2d puncture.	Meningitis.	Pulsation noticed. Nothing known as to cause; hydrocephalic. Post-mortem showed communication with lateral ventricle.
13	Weinlechner,	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	M.	7 mos.	Right parietal region.	Unknown	3 punctures with cataract needle.	Death.	6 days after 3d puncture.	Meningitis.	Cause unknown. Fissure present in parietal bone.

No.	Reporter.	Authority.	Sex	Age.	Location of fracture.	Time of appearance of tumour after receipt of injury.	Operative treatment.	Result.	Time of death.	Cause of death.	Remarks.
14	Billroth,	Langenbeck's Archiv f. klin. Chir., B. 3, S. 398.	F.	At birth.	Right parietal region.	Several days after delivery.	5 punctures 2 iodine injections.	Death.	6 days after 5th puncture.	Meningitis.	When seen by Billroth was 2½ years old. Injury produced by forceps at time of delivery. Post-mortem showed communication with right lateral ventricle.
15	Kraussold,	Langenbeck's Archiv f. klin. Chir., B. 20, S. 828.	..	9 mos.	Right occipito-parietal region.	Unknown	2 punctures.	Recovery.	......	......	Case not seen until 9 months after injury. Pulsation noticed.
16	Reckitt,	London Lancet, June 4, 1881.	M.	2½ yrs.	Right temporo-parietal region.	2 or 3 days.	1 aspiration.	Recovery.	......	......	Squinting noticed at time of detection of tumour, disappeared after tapping. Persistent paraplegia from spinal injury.
17	Lucas,	Guy's Hosp. Reports, 1880-1, p. 91.	M.	23 mos.	Left frontal region.	17 days.	1 tapping with hypodermic needle.	Recovery.	......	......	Pulsation noticed.
18	Conner,	....	M.	12½ yrs.	Right occipito-parieto-temporal reg.	At once.	5 punctures 1 aspirat'n.	Recovery.			
19	Conner,	....	M.	27 mos.	Right parietal region.	At once.	None.	Recovery.	......	......	Child hydrocephalic and rachitic.
20	Lawson,	Trans. Path. Soc. Lond., 1870, p. 311.	M.	13½ yrs.	Left frontal region.	18 months after trephining.	Open'd with lancet point	Recovery.	......	......	Trephined on account of fracture.
21	Barton,	London Lancet, Feb. 12, 1881.	M.	22 yrs.	Left fronta region.	3 days.	Opening with probe of bullet wound on sixth day.	Recovery.	......	......	Pistol wound. Pulsation noticed. Disappearance of tumour and cessation of discharge in less than a week.
22	Verneuil,	Vivien, op. cit.	M.	52 yrs.	Right frontal region.	10 days after cicatrization of scalp wound.	Reopening of wound.	Death.	3½ months.	Abscess in right frontal lobe.	Pistol wound. Pulsation noticed.

autopsy found to exist in one of Weinlechner's cases and in the one reported upon by Billroth.

As far as has yet been observed, excluding those cases which were primarily compound, this traumatic cephalhydrocele is met with only in young subjects. One boy that I saw was, as has been stated, in his thirteenth year, but no one of the other seventeen patients whose ages are given (Mr. Erichsen simply refers to his as a child) was over three years old, seven being under 1 year, five between 1 and 2 years, and five between 2 and 3 years of age. Explanation of this fact is probably to be found, at least in part, in the great elasticity of the skull in infancy and early childhood, permitting of marked depression and fissuring of the vault without that associated wound of the scalp which would be likely to occur were ossification complete; and in part also in the much closer connection of the meninges and skull in children than in youths and adults. The exceptional occurrence of the tumour in a boy over twelve years old was, it may be, because the injury was produced not suddenly by a fall, but by a comparatively slowly-acting crowding force of no very great amount.

The very decided gravity of these cases is at once apparent, when we find that of the eighteen of simple fracture in which the result is known, nine (50 per cent.) died—eight of meningo-encephalitis and one of erysipelas and meningitis; and of the three in which the fracture was originally compound, one died (33 and one-third per cent.) of cerebral abscess. Even the supposed recoveries may be regarded with some suspicion, because of too early report; since Mr. Lucas's first case died of acute meningitis nearly a year and a half after it was discharged from hospital apparently well. In two of the fatal cases (Giraldès' and Emery's) death may fairly be attributed to the treatment employed—incision and seton—which permitted of the free admission of air into the cavity. In at least a decided percentage of the patients who recover, a morbid mental condition, indicated by irritability of temper, may be expected to be manifested; as was the case with Mr. Lucas's first patient, and with the elder boy whom I saw. Though complete consolidation of the fracture with resulting cutting off of the communication between the intra- and extra-cranial cavities may occur, it is, I believe, very unlikely in any case in which the opening has been large and the subaponeurotic accumulation great.

Whether developed early or late—and it has been observed almost immediately after the injury, and on the other hand not until after the expiration of four months—the positive recognition of the nature of the tumour can often be possible only after the removal of a portion of its contents. When pulsation is absent—and it either was actually wanting, or undetected, or at least unreported in more than one-half of the cases analyzed—notwithstanding the evident fluidity of the contents of the swelling and the thinness of the percussion wave, the case will probably be regarded as one of hæmatoma, or, if manifested late, of deep-seated abscess.

When there is evident pulsation synchronous with the heart-beat; a normal-coloured thin scalp-covering, so thin it may be that translucency is observable; when increased fulness is apparent upon crying or holding the breath; when upon pressure a diminution in volume is readily effected with or without resulting symptoms of cerebral irritation, the diagnosis is clear and should be made at once: but under opposite conditions, when there is no pulsation; no translucency; no recognition of a cranial gap; nothing but the withdrawal of a fluid in appearance and chemical constitution similar to the cerebro-spinal fluid will determine the existence of a traumatic cephalhydrocele. In every case, therefore, where there is a subaponeurotic tumour and a history of a head injury having been received, if rapid subsidence of the swelling does not take place, an exploratory aspiration with at least the hypodermic syringe should be made.

As respects treatment, there is but little to be said. Internal medication cannot, I believe, have any direct influence either in restraining the effusion or promoting its absorption. Operative interference, if made at all, should be limited to the simple drawing off of the fluid. Free incision or the introduction of a seton (measures that have been employed) can only do harm and immensely increase the probability of a fatal result. Even aspiration or tapping with a fine trocar is advisable only when the amount of fluid accumulated has become so great that symptoms of intracranial pressure—pains; it may be squinting, as in Reckitt's case—are present, or there are indications of decided distension of the nasal or orbital lymph-spaces. Complete emptying of the sac need not be made, for rapid refilling may be expected; perhaps should not be made, for any considerable drawing off of the fluid from the intra-cranial spaces will at once give rise to symptoms of irritation. As I have already stated, I was compelled to suspend aspiration because of the supervention of pain in the forehead and in the side of the head; and such pain did not entirely disappear for two days.

It may be claimed that the presence of the fluid will delay or altogether prevent the repair of the existing fracture, and therefore it should be removed; but, unfortunately, the sac is in direct communication with the subarachnoid and ventricular cavities, and from these the fluid will quickly find its way back again into the space between the fragments. Mr. Clement Lucas believes that presence of the fluid is advantageous; lessening the risk of "acute cerebro-meningitis from the contact of angular fragments of bone with the surface of the brain."

Pressure has been employed, and if moderate is not likely to do harm, and may perhaps lessen the rapidity or the degree of the distension; but no possible good can be effected by firm pressure, which will almost certainly produce or increase the symptoms of intra-cranial irritation.

From what has been stated, the following general conclusions may be drawn:—

1. Simple fracture of the vault of the skull may give rise to a collection under the scalp of the cerebro-spinal fluid; coming, it may be, only from an opened ventricular cavity.
2. Such traumatic cephalhydrocele may be developed quickly, or only after the lapse of a number of days or even weeks.
3. The condition is one that has thus far been noticed only in young subjects.
4. The accident is quite likely to prove fatal from lepto-meningitis or meningo-encephalitis.
5. Operative interference should be restricted to the removal by aspiration of a limited amount of fluid; and such aspiration should be made only when severe pressure symptoms have manifested themselves.
6. A similar fluid accumulation may occur after closure of the external wound of a compound vault-fracture or of a trephining.

ARTICLE VIII.

OCCURRENCE OF A RARE HUMAN TAPEWORM (TÆNIA FLAVOPUNCTATA).

By JOSEPH LEIDY, M.D., Professor of Anatomy in the University of Pennsylvania.

RECENTLY, Prof. William Pepper sent to the writer for examination some little tapeworms, which were reported to have been expelled from a child of three years of age, after the administration of santonin. Dr. T. V. Crandall, in whose practice the case occurred, informs us that the child, a boy, of German parentage, born in Philadelphia, had been weaned at twenty months, and since had partaken of the ordinary articles of food. The mother had previously noticed the passage of worms from the child, which led her to apply to the physician for treatment. Since then, nothing further has been learned respecting the condition of the patient.

The specimens consist of a dozen fragments, apparently of three tapeworms, which reached the length of about a foot to fifteen inches or more. Unfortunately, from all the fragments the head has been torn away and lost, though several delicate pieces were certainly close to the neck. The anterior part of the body is greatly attenuated, thread-like, and only about one-tenth of a millimetre in diameter where most delicate. The widest part of the body posteriorly, where the joints are mature, is two and a quarter millimetres in diameter. In their present condition, the specimens, preserved in alcohol, are of a cream colour generally, but mature